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A SYSTEM OF NOTATION APPLIED TO ENTOMOLOGICAL ACCESSIONS.

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THE object in presenting the following outlines for use of symbols to assign insect specimens with notes, and *vice versa*, is to proffer an aid such as has been utilized by the writer for the specification of different kinds and conditions of entomological material contained in an accession. When a collection is made of insects affecting one host or product, or otherwise pertaining to a certain subject, the specimens being obtained at the same time under like circumstances are recorded as an accession. Each accession is numbered consecutively, beginning with the figure 1, in accordance with the order of collection. Special symbols are proposed for the designation of particular steps in a progressive method of assorting the material of an accession with regard to classificatory and conditional discrimination of one or more species of insects.

In practice, the method has proved very convenient for conducting breeding experiments with different species belonging in a single accession. The procedure is especially valuable in preventing confusion or mistakes in the course of an investigation, and it effects an assignment of the records of biological facts in corresponding phases.

This plan is adapted to the expansible loose-leaf or card-filing system of keeping records. To maintain perfect connection between specimens and notes, the proper symbols used in each case need to be indicated with the detailed records, and the corresponding specimens should be similarly designated. When a specimen is mounted on a pin for preservation, a pin-label bearing the accession number and symbols should be given a prominent place among the other labels on the pin. Specimens in preservative solutions, or else mounted on slides, require the designations on an enclosed slip or attached tag. If distinguished by the symbols, any particular specimen, when wanted, may be readily picked out from a general collection. In breeding tests, specimens can be tagged in a suitable manner, but alteration of symbols is made to accord with change of stage and isolation. Connection between records, with modified symbols relating to a direct series, should always be signified by means of cross-references.

OUTLINES FOR USE OF SYMBOLS.

Characters possessing a more distinctive appearance than would be presented by a decimal arrangement, even if such could be conveniently applied, have been selected for the symbols. The accession number, in Arabic figures, must precede everything for designation of and reference to the original record, together with its specific notes and detailed additions.

First. For the first series of symbols, to indicate nature or general classification of specimens, use Roman numerals as assigned below. Consistency in the use of these symbols relates to all accessions alike.

I. Mixed collection if not specified further, and to include invertebrates other than insects or their associated allies.
II. Dipteroidea: the flies and fleas.
III. Lepidopteroidea: the butterflies and moths.
IV. Hymenopteroidea: bees, wasps, ants, stinging parasites, and sawflies.
V. Coleopteroidea: beetles, weevils, and twisted-winged parasites.
VI. Neuropteroidea: the inactive metomorphic nerve-winged insects.
VII. Hemipteroidea: the true sucking bugs and lice.
VIII. Orthopteroidea: the leathery-winged insects.
IX. Platyptera: termites and mandibulate lice.
X. Archiptera: the active metamorphic nerve-winged insects.
XI. Aptera: wingless and nonmetamorphic insects.
XII. Myriapoda: centipedes and thousand-legged worms.
XIII. Arachnida: spiders, ticks, mites, and their near relatives.

Second. For the second series of symbols to denote the separation of species for determination and investigation, use capital letters. Species should be recorded by scientific names if known at the time of assignment, but names may be learned later, since they are not required for conducting observations when symbols are used.

The necessity of a considerable latitude in the application of symbols in this series requires a different degree of fitness in comparison with the preceding and succeeding series, in so far that the assignment of a letter to a species in one of the groups as designated in the first series is made independent of the use of an identical letter in another group, either in the same or separate accession. The letters can therefore be used in any group without regard to another, but each character must not be applied to more than one species in the same accessional group.

In case more characters than are offered in the alphabet are needed for the designation of species in a group, the surplus material may be assigned to a separate accession, and then as-sorted independently. But if a continuation of specific assignments were desired, without resorting to a division of the material into limited accessions, letters can be used in double standing, and for further need use treble, and so forth. Such extensive demands for any group, however, is a very remote possibility.

Third. For the third series of symbols, to denote the stage or inseparable stages of a species, with or without host or enemy, either for rearing or preservation, use small letters as assigned herewith.

a. For adult, or mature stage.
b. For pupa or nymph, or metamorphic stage.
c. For larva or young, or larval stage.
d. For egg or ovum stage.
e. For inseparable stages, as in colonies.

Fourth. For the fourth series of symbols, to specify a separate specimen, pair or colony of any previously designated species, with regard to particular or collective stages, either to be preserved or else isolated for observational purposes, use Arabic figures in consecutive order.

SUMMARY.

An explanation of the entire plan for use of symbols may be summarized by steps composing the following course of procedure:

All insects contained in an accession are first sorted into superordinal groups as a basis of classification. Each group is then designated by a Roman numeral according to the assignment given.

The second step consists in separating the species in each group and indicating each species by a capital letter.

In the third step the separate or collective stages of each species are determined, and designated by a small letter, as per assignment.

Finally, each specimen or pair with respect to one stage, or colony with respect to collective stages, is numbered in consecutive order as desired for special designation. Arabic figures are used for numbering.

Example explained : 1.V.A.a.l.

1.	Denotes first accession.
1.V.	Indicates an assortment of insects belonging in the superordinal group Coleopteroidea, as found in the first accession.
1.V.A.	Indicates the first specification of species sorted out from the previously designated group.
1.V.A.a.	This refers the designated species to the adult stage, should such be the case.
1.V.A.a.l.	Denotes first isolation or particular specification of one or a pair of adults as previously designated.

RECORD SHEETS.

The size of record sheets preferred by the writer is 5 by 8 inches. Its chief advantages are that it allows ample space for writing records, and is easily managed on a typewriter with which two forms are used, one being for accessions and experimental notes, and the other for references and bibliographies. Another specially prepared form of same size, however, is used for entering meteorological observations. Experimental data may first be written by hand on small temporary cards, but after being brought to a termination in respect to a degree of advancement, they should be copied onto the regular form for permanent filing.